

REMARKS

This Amendment is submitted in response to the Final Office Action, dated January 21, 2005. Claims 11 through 14, 24 and 25 have been amended. Claim 23 has been cancelled. The application now includes claims 11 through 17, 20 through 22 and 24 through 26, with claims 14 and 22 being independent claims. Favorable reconsideration of the application, as amended, is respectfully requested.

In the Final Office Action, the Examiner rejected independent claim 14 under 35 U.S.C. §103(a) as being unpatentable over U.S. Patent No. 4,784,237 to Condne et al. in view of U.S. Patent No. 5,473,945 to Grieff et al. The Examiner stated that the Condne et al. reference discloses an inertial sensor element 20 mounted upon a base, and a plurality of signal conditioning circuits 36 and 40 connected to the sense element. The Examiner also stated that high and low frequency accelerations comprise different ranges and that the only difference between the claimed invention and the Condne et al. reference disclosure is mounting the sense element upon a silicon wafer. The Examiner further stated that the Grieff et al. reference teaches mounting an accelerometer on a silicon wafer in order to provide a micro-mechanical accelerometer. The Examiner then concluded that it would have been obvious to mount the sense element of the Condne et al. reference on the silicon wafer as taught by the Grieff et al. reference.

Applicant has amended independent claim 14 to recite a plurality of signal conditioning circuits connected to a single linear acceleration sensor element, with a first one of the signal conditioning circuits being calibrated to sense a first range of change in linear acceleration of the body. Applicant also has amended independent claim 14 to recite that a second one of the signal conditioning circuits is calibrated to sense a second range of change linear acceleration of the body.

The Condne et al. reference states, in column 2, lines 41 through 61, that:

If acceleration forces act upon the disk 20 of the apparatus 15 in the event of an accident, then the disk 20 is deflected out of its basic position. Two cases, of a slow rotation and an accelerated rotation, must

be distinguished from one another. In the case of a slow rotation of the disk 20 about the axis of the torsional bar 19, its weight, together with the torsional force which however counteracts it, leads to a change in the distance between the measuring face 22 and the distance sensor 23. This deflection now serves as a standard for *the angular position with respect to the horizontal, by means of which the position of the motor vehicle can be determined.*

If the apparatus 15 and in particular the disk 20 having the extension 21 is rotated in an accelerating fashion, then the mass inertia of the disk 20 and the mass of the extension 21 likewise produce a change in the distance between the measuring face 22 and the distance sensor 23. Via the distance measurement, a measurement signal *for the incident angular acceleration, and from it the rotational velocity of the motor vehicle, is attainable.* (Emphasis added.)

Based upon the above, applicant believes that the Condne et al. reference teaches sensing changes in angular position of the vehicle and rotational velocity of the vehicle, not changes in linear acceleration of a body, as recited in amended independent claim 14. Indeed, because the Condne et al. reference teaches sensing changes in rotational body motion parameters, applicant believes that the reference actually teaches away from the structure recited in amended claim 14. Therefore, combining the Condne et al. and Grieff et al. references will not produce the structure recited in amended claim 14. Accordingly, applicant believes that amended independent claim 14 is patentable over the cited references and respectfully requests that the Examiner withdraw his rejection of the claim.

The Examiner also rejected claims 11 through 14 and 23 through 25 under 35 U.S.C. §103(a) as being unpatentable over U.S. Patent No. 6,386,040 to Broillet et al. in view of the Grieff et al reference. The Examiner stated that the Broillet et al. reference discloses an inertial sensor comprising an acceleration sensor 31 mounted upon a body, which is subject to vibrations, and a plurality of signal conditioning circuits 33 and 34 connected to the accelerometer. The Examiner also stated that low frequency vibrations comprise a first range of change in a body motion parameter, and high frequency vibrations comprise a second range of change in a body motion parameter. The Examiner further stated that the Grieff et al. reference teaches

mounting an accelerometer on a silicon wafer in order to provide a micro-mechanical accelerometer. The Examiner then concluded that it would have been obvious to mount the acceleration sensor of the Broillet et al. reference on the silicon wafer taught by the Grieff et al. reference.

Applicant has further amended independent claim 14 to recite a plurality of signal conditioning circuits that are operable to generate a plurality of electrical output signals with each electrical output signal being a function of a change in a specific body motion parameter while also being within the calibration range associated with the signal conditioning circuit.

The Broillet et al. reference states in column 3, lines 12 through 17, that:

The main advantage of the invention is that it allows to obtain, by means of a sole transducer and a sole measurement chain, *a single output signal* which, in the range of low frequencies, corresponds to the vibration velocity, and in the range of medium and high frequencies, to the vibration acceleration. (Emphasis added.)

As stated in his Amendment filed on December 1, 2004, applicant believes that the Broillet et al. reference teaches generation of a single output signal, as described above as the main advantage of the invention and illustrated by the summing point 40 shown in Fig. 2 of the reference, not a plurality of output signals, as recited in amended independent claim 14. Indeed, because the Broillet et al. reference teaches generating a single output signal, applicant believes that the reference actually teaches away from the structure recited in amended claim 14. Therefore, combining the Broillet et al. and Grieff et al. references will not produce the structure recited in amended claim 14. Accordingly, applicant believes that amended independent claim 14 is patentable over the cited references and respectfully requests that the Examiner withdraw his rejection of the claim.

In the Final Office Action, the Examiner rebutted applicant's previous above argument by stating that the apparatus of the Broillet et al. reference clearly generates a plurality of electrical signals, one in channel 33 and another in channel 34. The

Examiner then stated that the subsequent combination of the plurality of electrical signals at summing point 40 does not diminish the fact that each channel comprises an electrical signal. The Examiner further supported his opinion by noting dependent claim 25 which recited a device connected to the signal conditioning circuits that is operable to combine the signals generated by the signal conditioning circuits into a single output signal.

As described above, the applicant has further amended independent claim 14 to recite that the plurality of signal conditioning circuits are operable to generate a plurality of electrical output signals with each electrical output signal being a function of said change in the linear acceleration. The separate output signals as recited in amended claim 14 are clearly illustrated in Fig. 2 where a single sense element 24 is connected to two signal conditioning circuits 26 and 28. The outputs of the signal conditioning circuits 26 and 28 are separate and connected to two separate control devices 30 and 32, respectively. The structure illustrated in Fig. 2 also is described in paragraph no. 30 of the specification. While the Broillet et al. reference does show two intermediate signals on channels 33 and 34, the intermediate signals are combined into a single output signal at the summing point 40. Indeed, as described above, the Broillet et al. reference cites the single output signal as being *the main advantage of the invention*. Thus, the structure illustrated in Fig. 2, and recited in independent claim 14 is entirely different from the structure disclosed in Broillet et al. reference.

Regarding the reference by the Examiner to claim 25, which is dependent upon amended independent claim 14, the claim was intended to recite a means for combining the separate output signals for efficiency of transmission with subsequent separation into the original output signals. This intent is clearly illustrated in Fig. 5 and described in paragraph 35 of the specification. In order to clarify the intent, applicant has amended claim 25 to recite that the sensor also includes a modulator for combining signals and a demodulator for separating signals with the modulator communicating with the demodulator. Amended claim 25 also recites that the modulator is connected to the signal conditioning circuits and is operable to combine

the output signals generated by said plurality of signal conditioning circuits into a single output signal that is transmitted to the demodulator. Amended claim 25 further recites that the demodulator is operative to separate the transmitted signal into the individual output signals generated by the signal conditioning circuits. Thus, amended claim 25 recites a plurality of individual output signals provided by the sensor. While claim 25 does recite the limitations of modulation of multiple signals into a single signal and subsequent demodulation into a plurality of output signals, these limitations are not included in amended independent claim 14. Accordingly, for the reasons given above, applicant believes that amended independent claim 14 is patentable over the art of record and respectfully requests that the Examiner withdraw his rejection of the claim.

It is to be noted that applicant also has amended claims 12 and 24, which are also dependent upon amended independent claim 14, in the same manner as he has amended claim 25.

Claims 11 through 13, 20, 24 and 25 are dependent upon amended independent claim 14 and include the limitations recited therein. Accordingly, for the reasons given above, applicant also believes that claims 11 through 13, 20, 24 and 25 are patentable over the cited references and respectfully requests that the Examiner withdraw his rejection of the claims.

In the Final Office Action, the Examiner also stated that claims 15 through 17, 21, 22 and 26 are allowed.

In view of the amendments and above remarks, it is believed that the application is now in condition for allowance.